Emergency Generator Service Contract
STATEMENT OF WORK

1. GENERAL INFORMATION

1.1. The United States Embassy, Djibouti Facility Management Section (FAC) requires professional services and contractor cost proposals to perform semi-annual and annual preventive maintenance and servicing of the facility's emergency generator system over a base and four optional year contract term.

2. PROJECT REQUIREMENTS

2.1. DESCRIPTION OF EQUIPMENT:

Manufacturer/Make/Year:	Caterpillar/ 2009	Caterpillar/ 2009
Model No:	3512 HD	3512 HD
Serial/Order No:	YAN00143	YAN00144
Load Rating: (Emergency/Standby/Prime)	1280 kW/1600 kVA	1280 kW/1600 kVA
Power Factor:	0.8	0.8
Frequency:	50 Hz	50 Hz
Load in Amperage:	2309.4 A	2309.4 A
Output Voltage:	400 V	400V
Phase:	3 Phase, 4 Wire with Ground	3 Phase, 4 Wire with Ground
Building:	Utility	Utility
Location (Area/Room):	Room U103	Room U102

3. GENERAL REQUIREMENTS.

3.1. The Contractor, under this Scope of Work (SOW), will be responsible for labor and tools required to carry out all preventive maintenance as outlined in this SOW.

3.2. The Contractor will be required to evaluate the equipment and provide FAC with a maintenance schedule.

3.3. Contractor must submit to the Contracting Officer's Representative (COR) for review, work sheet/checklist that will be used for performing maintenance service.

3.4. Embassy staff has service manuals for all generators on-site.

3.5. Contractor shall provide all supervision, labor, tools, and equipment to perform Preventive Maintenance for the listed generators.

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3.6. All personnel working in the vicinity shall wear and /or use safety protection while all work is performed. Any questions or injuries **shall** be brought to the attention of the Post Occupation Safety and Health Officer (POSHO).

3.7. Material Safety Data Sheets (MSDS) shall be provided by the contactor for all HAZMAT materials. Copies will be provided to the COR for approval.

3.8. Preventive maintenance for Standby generator sets to be performed by a **Caterpillar certified technician or mechanic.**

3.9. All off site calibration of generator components to be performed by an authorized Caterpillar repair location, a calibration certificate for each calibrated component must be issued.

3.10. Perform all annual preventive maintenance procedures prior to beginning out-year cycles.

3.11. COR must immediately be made aware of any condition discovered that could result in equipment failure.

3.12. Test and inspection report shall be submitted to the COR within three days of completing work.

3.13. If any discrepancies are found with the generator system that are not covered under this scope of work then the contractor must provide the following:

3.13.1. Detailed report noting the discrepancy found.

3.13.2. Bill of Materials (BOM) to include component name, quantity, part #, and price for any repair material required and material lead time.

3.13.3. Price quote for repair labor.

4. SEMI-ANNUAL CHECK **(ENGINE NOT RUNNING)**..

4.1. Conduct visual check around the generator.

4.2. Check the battery's liquids specific gravity, do battery load test, top up if necessary.

4.3. Clean battery terminals and lugs.

4.4. Check all V and fan belts make sure there are no hair line cracks on the belts, replace if cracked or worn.

4.5. Check and adjust tension on all V and fan belts.

4.6. Check coolant level and top up if necessary.

4.7. Check specific gravity of coolant. Replenish as necessary to maintain manufacturers recommended level of coolant additive.

4.8. Check operation and components of water jacket heating system.

4.9. Test fuel day tanks for water. Record water levels in tanks. .

4.10. Drain condensate from exhaust condensate trap.

4.11. Clean air filter element. Inspect all fuel, oil, and water piping for secure mounting.

4.12. Inspect exhaust piping and muffler insulation.

4.13. Inspect crankcase breather tube.

4.14. Check all control panel indication LED's.

5. SEMI-ANNUAL CHECK **(ENGINE RUNNING)**

5.1. Turn off the generator circuit breaker and run the generator unloaded for 15 minutes. Check the generator for unusual conditions, such as: excessive vibration, excessive black or white smoke. The following indicators on the control panel also need to be checked and varified while the generator is running: oil pressure, water temperature, rpm, voltage, and frequency.

5.1.1. With the engine running and the generator circuit breaker open:

5.1.1.1. Jumper water temperature switch

5.1.1.2. Jumper oil pressure switch

5.1.1.3. Jumper coolant low-level switch

5.1.1.4. Press emergency stop push button.

5.1.1.5. Each time the switch is "jumpered" or the emergency stop button is pressed the engine should stop and the corresponding failure lamp should illuminate. Reset the shut down mechanisms after each test.

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5.1.2. Start unit and run with load bank connected for 1 hour at minimum 70% load

5.1.3. Read and record verify all engine and alternator indicators

5.1.4. Check exhaust for excessive black or white smoke. (See manufacture's manual)

5.1.5. Check turbocharger for vibrations, check for any abnormal noise during operation.

5.1.6. Check generator bearing for noise and overheating

5.1.7. Check exhaust manifold, muffler, and piping for leaks and secure mountings

5.1.8. Check fuel day tank for overheating

5.2. Check exhaust backpressure at Diesel particle filter (Dpf.), if above 24 In.H20 / 6 kPa , Dpf filters to be removed and cleaned.

6. SEMI-ANNUAL CHECK **(ENGINE STOPPED AFTER RUNNING)**

6.1. Inspect engine water, fuel, and oil systems for leaks while engine is hot.

6.2. Fill out maintenance checklist and report deficiencies.

7. ANNUAL CHECK **(ENGINE NOT RUNNING)**

7.1. Perform complete semi-annual 'engine not running' schedule (Section 4).

7.2. Change fuel filters every 250hrs or once a year whichever is sooner

7.3. Change coolant filters every 250hrs or once a year whichever is sooner

7.4. Inspect battery charging Alternator and V belt.

7.5. Inspect engine and generator wiring harness for wear and damages.

7.6. Inspect supports and spring isolators for soundness and stability.

7.7. Inspect unit thoroughly for loose fasteners.

7.8. Clean radiator air passages and exhaust air ducts.

7.9. Clean intake louvers and ducts.

7.10. Inspect unit for corrosion. Remove any corrosion, prime and paint.

7.11. Inspect fan drive idler pivot arm assembly and shock absorber

7.12. Inspect Belt driven fan hub

7.13. Take fuel oil samples and analyze

8. ANNUAL CHECK **(ENGINE RUNNING)**.

8.1. Perform complete semi-annual 'Engine running' schedule (Section 5).

9. ANNUAL CHECK **(ENGINE STOPPED AFTER RUNNING).**

9.1. Perform complete semi-annual 'Engine stopped after running' schedule. (Section 6).

9.2. Change crankcase oil and filters every 250 hrs or once a year whichever is sooner.

9.3. Fill out maintenance checklist and report deficiencies.

10. OUT YEAR CHECKS

10.1. Third Year Checks:

10.1.1. Inspect Turbocharger

10.1.1.1. Inspection to include bearings, seals, exhaust and air impellers.

10.1.1.2. Change all gasket and seals.

10.1.2. Inspect Rotating rectifier

10.1.2.1. Inspect and clean rotating rectifier per manufacturer's recommendations.

10.1.2.2. If replacement is warranted, provide a proforma to the COR for action to include all material and labor.

10.1.3. Replace batteries

10.1.3.1. Replace batteries with minimum 9X-9730 Caterpillar Deep Cell batteries.

10.1.3.2. Provide two (2) batteries for each generator.

10.1.4. Replace cooling system temperature regulators (p/n 219-3240-6I-4950) with seals.

END SCOPE OF WORK